

1904



**ORGANIZED
HAND WORK**

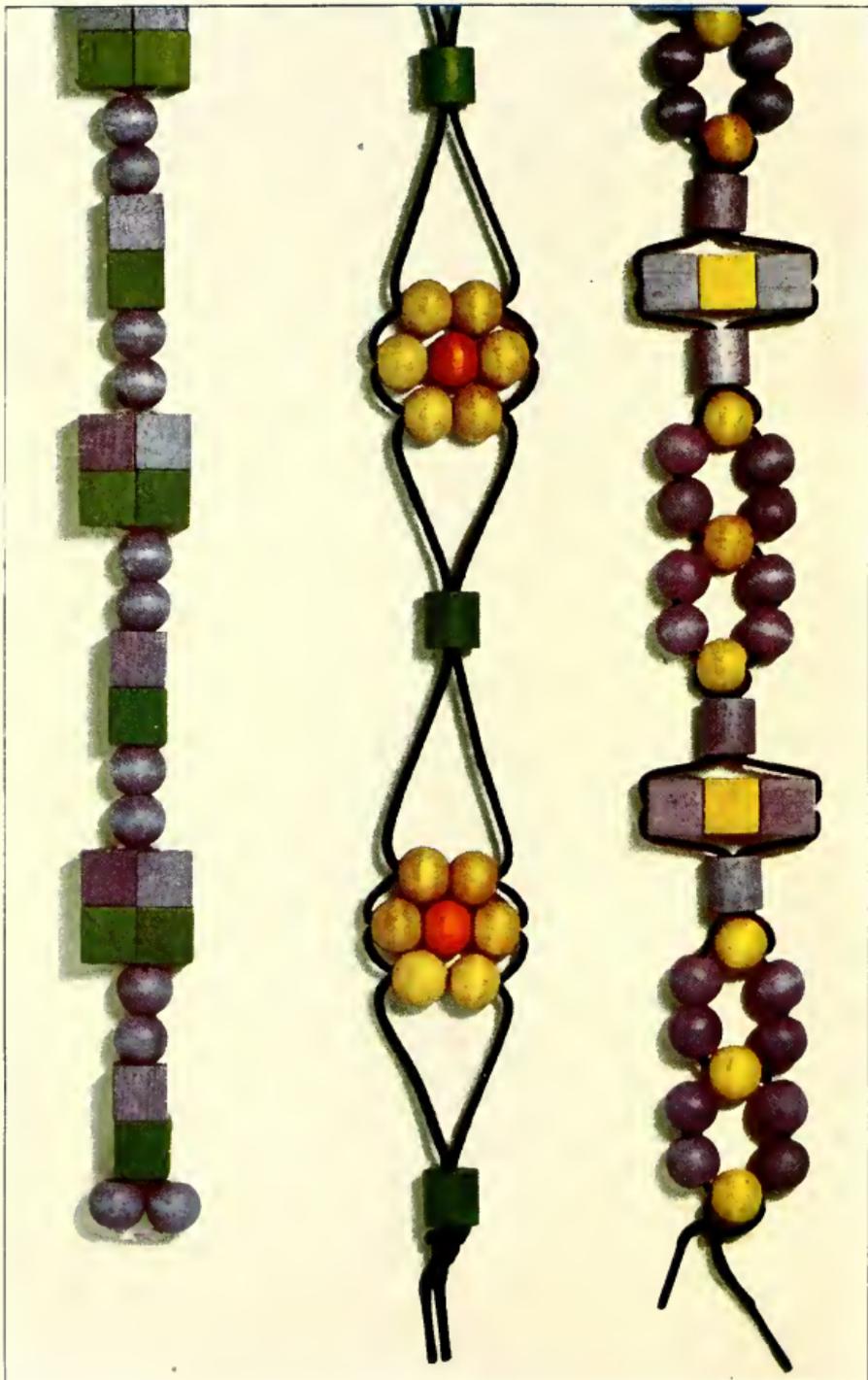


For Public Schools
From
First to Eighth Grades

No. 1—Bead Stringing



Published by
CHICAGO KINDERGARTEN COLLEGE



FREE INVENTIONS OF THE CHILDREN AFTER FORMULATED
WORK HAD BEEN GIVEN

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PLATE IX

Fig. 1

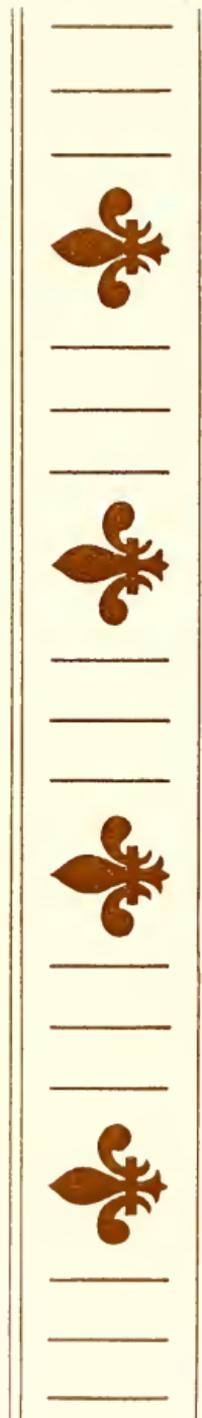


Fig. 2

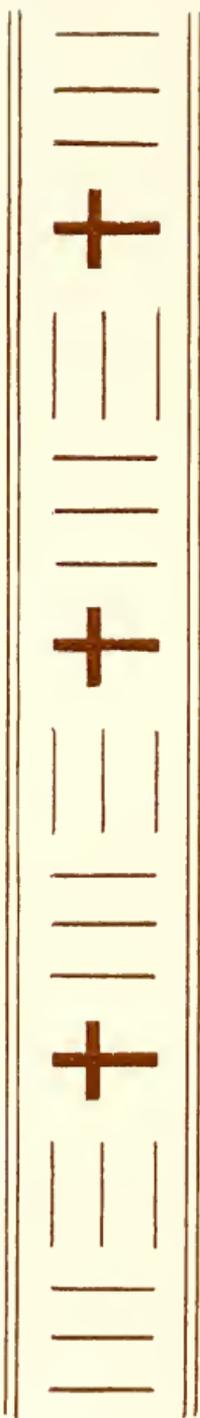


Fig. 3



Children's designs in space proportioning, after having learned the same in bead stringing
Nos. 1 and 3 showing balance; No. 2 showing repetition.

Bead Stringing

The time has passed when arguments have to be used to prove the educational value of handwork in the school-room. Much, however, remains to be done in the way of selection and of the organization of that handwork so as to make it as efficient and as economical as possible, both in time and materials. The following series of lessons were suggested by the well-known logical organization of the kindergarten handwork. They, however, have been adapted to the more advanced grades of public schools, and most of them have been satisfactorily tested in our public school-rooms with forty or fifty children under one teacher.

The Three Fundamental Elements of All Handwork

The first fact to be met in any logical organization of handwork is that *point*, *line*, and *surface* are the three elements by means of which all the transformations and creations of the hand of man are accomplished. The casting of iron ore, the molding of clay, and a few other of the plastic arts may, perhaps, be excepted. Even these, however, are more or less dependent upon the accuracy which the workers in them have acquired in the placing of points, the measuring of lines, and the proportioning of surfaces.

A knowledge of points, lines, and surfaces, therefore, aids the child in gaining power to transform the materials of nature about him (upon which the most of the industrial world depends) through the creative works of his hand

(upon which all *art* depends) or in his experimental use of material things (upon which most of the *mechanical inventions* and *scientific discoveries* depend).

It is not only best to begin his manual training as early as possible, but also to have it well organized as to the use of points, lines, and surfaces. We give him organized training in the use of language, and also the code of morals and manners which the race has discovered to be essential. Is it not equally as rational to give him the benefit of these fundamental elements of construction which long ages of handwork have discovered, namely, the *embodied* point, line, and surface?

The following exercises have been tested with the children of the first, second, and third grades of one of the Chicago Public Schools. In these exercises it is taken for granted that time is always allowed for free invention with each new element as soon as the child has mastered it sufficiently *to use it consciously as a tool* obedient to his will. But only a few of these inventions are here given, as each new set of children will create new designs for themselves.

The Use of Beads by the Child-Race In some of the caves occupied by primeval man have been found little bits of fossil coral and beads of hardened clay, as well as the ornaments of teeth and shells. During the Bronze Age, in the Swiss Lake locality, glass beads were in use, but no vessels of glass have as yet been discovered.

In our North America mounds of the Bronze Age are found many ornaments — the number of beads is quite surprising. They are generally made of shell, but are sometimes cut out of bone or teeth. In form they are usually round or oblong. The necklaces are often made of beads

PLATE I



I

One Color
One Form
One Number
One Position

II

Two Colors
One Form
One Number
One Position

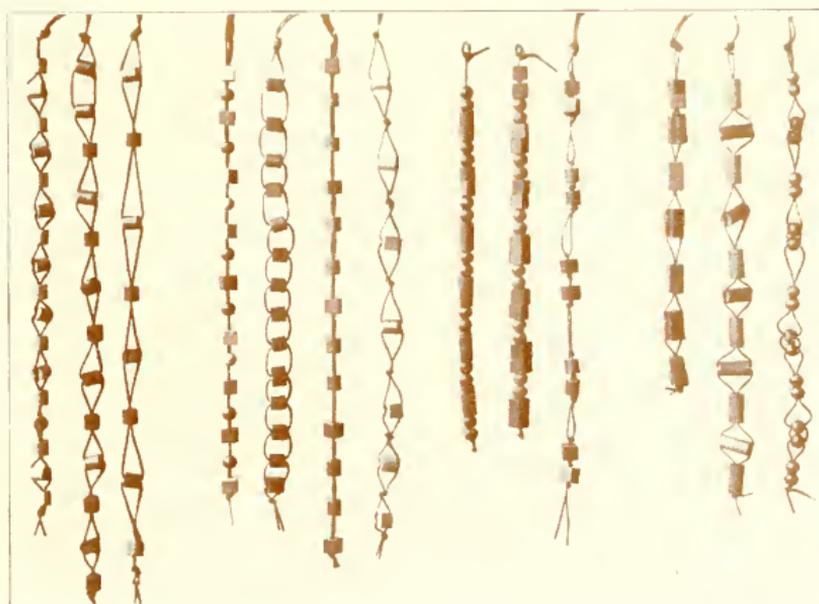
III

One Color
Two Forms
One Number
One Position

IV

One Color
One Form
Two Numbers
One Position

PLATE II



V

One Color
One Form
One Number
Two Positions

VI

Two Colors
Two Forms
One Number
One Position

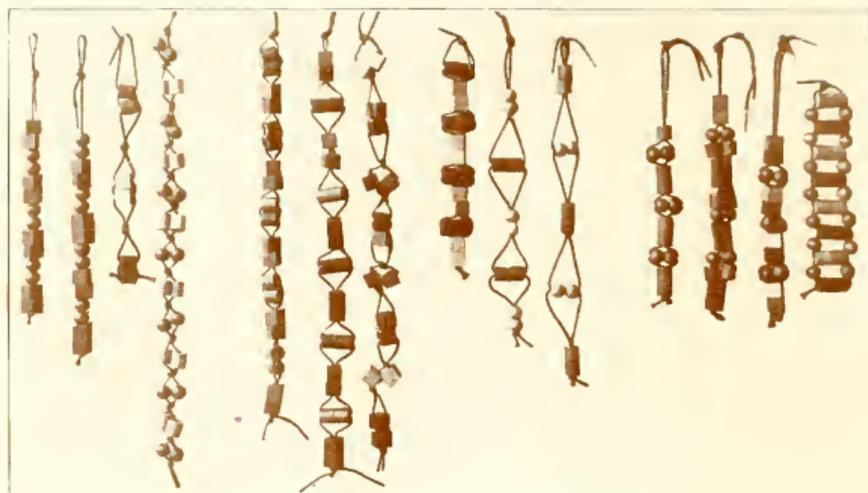
VII

One Color
Two Forms
Two Numbers
One Position

VIII

One Color
One Form
Two Numbers
Two Positions

PLATE III



IX

Two Colors
Two Forms
Two Numbers
One Position

X

One Color
Two Forms
Two Numbers
Two Positions

XI

Two Colors
Two Forms
Two Numbers
Two Positions

XII

Three Colors
Two Forms
Two Numbers
Two Positions

PLATE IV



Free inventions of the children after formulated work had been given.

or shells, but they are sometimes made of teeth. The ancient inhabitants of France were most attracted to the bright-colored shells. In Scotland have been found necklaces of nerites and limpets. Among the favorite ornaments found in Italy are beads of *jet* with very fine *ocherous clay* dried in them; also beads made of *crystalline rock*. In other places have been found beads of amber and hyaline quartz, the brightness of which attracted attention. Other excavations have yielded numerous carefully polished balls of calx, varying in diameter from one to two inches. Plaque-shaped *ivory* beads with queer engravings scratched on them have also been found among the relics of prehistoric peoples. Thus we see that the child-race used beads, and the child of to-day is equally fond of them. They were, therefore, selected as the beginning of these lessons in orderly arrangement of handiwork.

It is not absolutely necessary that beads shall be used, as seeds, of which marvelously beautiful combinations of color may be made, acorns, buttons, pebbles, or any other small objects *which do not attract attention to a difference in dimension* may serve with the children as "embodied points." The educational value of any of these lies largely in the right use of them.

**Educational
Value**

FIRST. In Organizing Position; as, for instance, "Place your bead (seed, or other object) in front of you." "Place it to the right, to the left," etc.

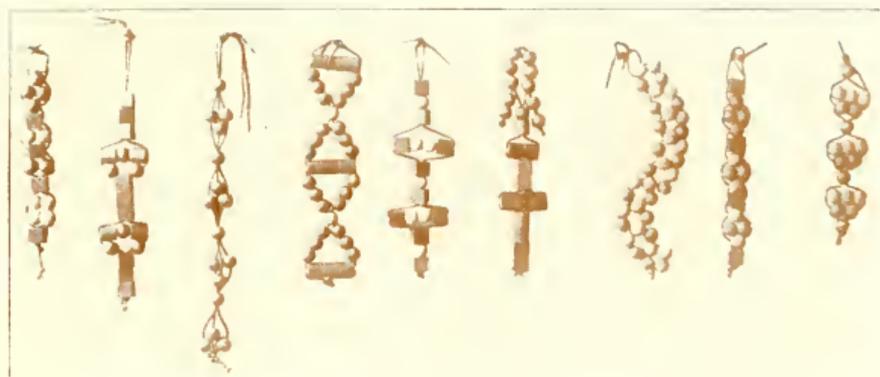
SECOND. In Organizing Relative Position of one object to another; as, for instance, "Put it on top of your book." "Place it at the back of your book. Put it under the book," etc.

THIRD. In Organization of Proportionate Distance of one object from another; as, for instance, "Place the bead one inch from the edge of the desk, two inches," etc.; or, "Place a row of beads one inch apart." "Place another row one inch back of these." "Two inches back of these place another row," etc.

Simple as these three exercises seem, out of them come not only the beginning of definite language and number work, but also the awakening of a feeling for rhythm and a sense of proportion, as well as a love of harmony of color. However, the most important educational result is the consciousness of the fact that *number* underlies all rhythm, all proportion, and all harmonious combinations of colors.

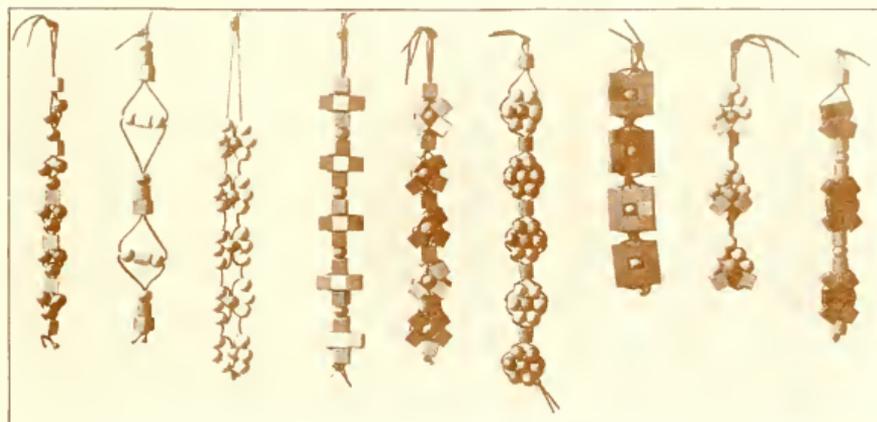
Much fun and lively work may be commingled with such exercises. Fully as much of a game may be made out of it as is made of the historic game of "Simon says wiggle waggle." Yet at the same time the child is gaining alertness of attention, quickness in comprehending directions, promptness in obedience to command, location of the various parts of his body, his desk, the room, etc., and when first one and then another of the children are allowed to describe what he or she has done, and, after a time, to give directions to the rest of the class, consciousness of language is also developed. As, for example, "Place your bead in the palm of your right hand, in the palm of your left hand, on the back of your right hand, on the back of your left hand. Place it against your right cheek, your left cheek, your forehead, the end of your nose, your chin. Touch your right elbow with it, your left elbow, your right shoulder, your left shoulder," and so on.

PLATE V



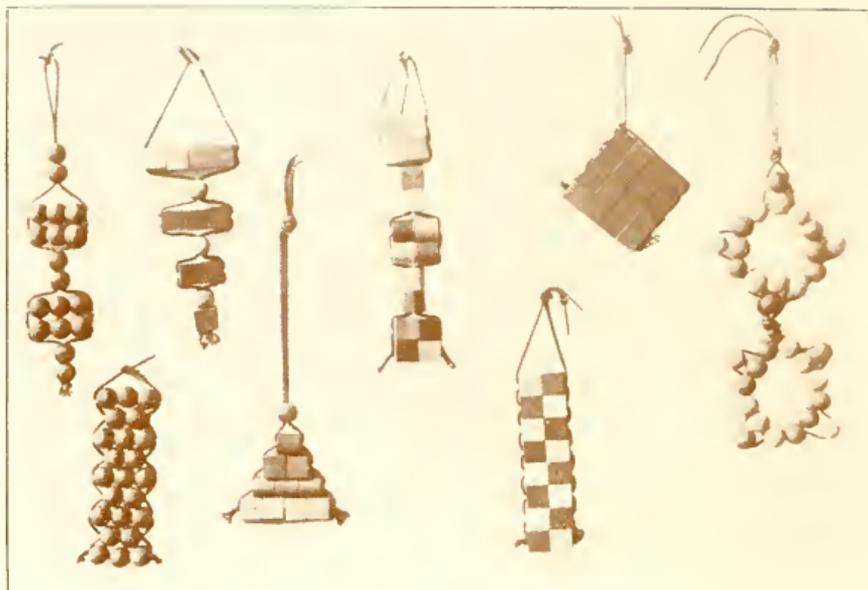
Free inventions of the children after formulated work had been given.

PLATE VI



Free inventions of the children after formulated work had been given.

PLATE VII



Free inventions of the children after formulated work had been given.

PLATE VIII



Free inventions by older pupils after formulated work had been given.

Bead Stringing With the stringing of the beads, seeds, or other small objects, come not only more permanent work, but much more pleasing effects, and also, as has already been stated, the important discovery, not always recognized, *that rhythm and song are based on number work*, and that the pleasing effect in *the spacing of designs for ornamentalions is also based on numerical proportions*.

In this pamphlet is given a short list of a few of the ways in which such stringing of small objects has been organized, Nearly four hundred different combinations may be made with single strings of the kindergarten second gift beads, and more than a thousand combinations may be made where two or more strings are used, *all being definitely organized work*. No one would be foolish enough to try to make all of these different designs, but this shows that there need be no fear lest children should not have sufficient freedom in their creative work. The difference between this and the haphazard work as used in some schools is, that the child is working freely, but also under a law. This is an important thing to be learned, as *all true freedom is under a law*.

The rainbow colors of the Hailman second gift beads add much to the children's pleasure in the use of them, and increase the possibilities of combinations that are both rhythmic and harmonious in color, although the uncolored beads are less expensive, and the softer varieties of seeds make a very good substitute. These can be collected and sorted by the children. As before stated, remarkably beautiful colors are often found among the commonest seeds, and the children are led to see some part of the wealth of color which nature offers.

FIRST STEP. The children were allowed to string the beads without any direction otherwise than, "Count your

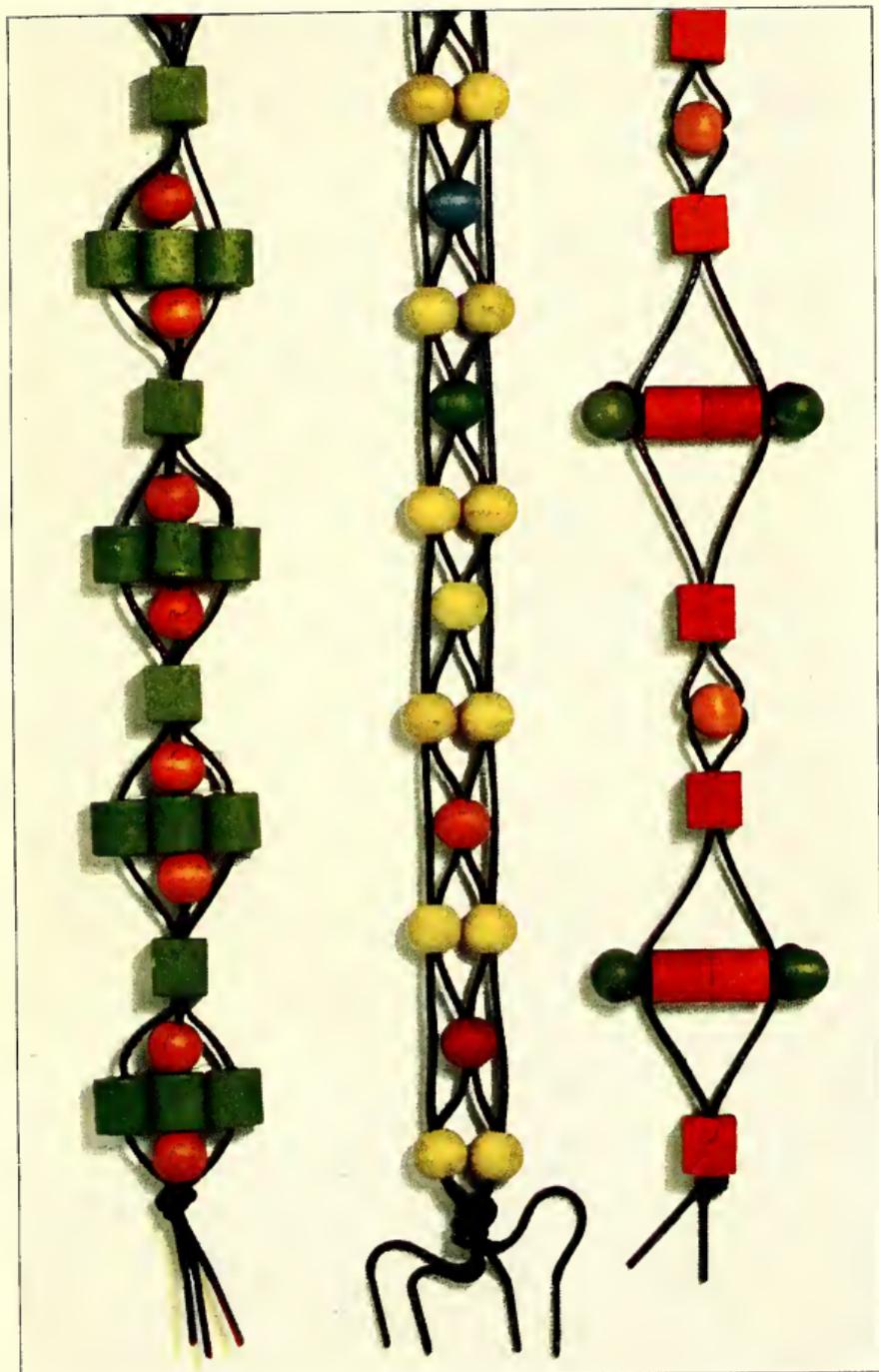
beads and then string them on the string.” (A soft, round shoestring cut in half and knotted at the cut end has been found to be the most practical string for the stringing of the second gift beads.)

At first not more than twenty-four beads were put into each box or pan. In this way the teacher easily kept track of the beads and saw at a glance whether or not all the beads had been strung. A proper care of materials minimizes the temptation to steal, and it is one of the moral lessons that handwork brings into the school-room. Therefore a care of the material and a right respect for it should be insisted upon. A misuse of it is quickly cured by withholding it for a day or two from the child who misuses it.

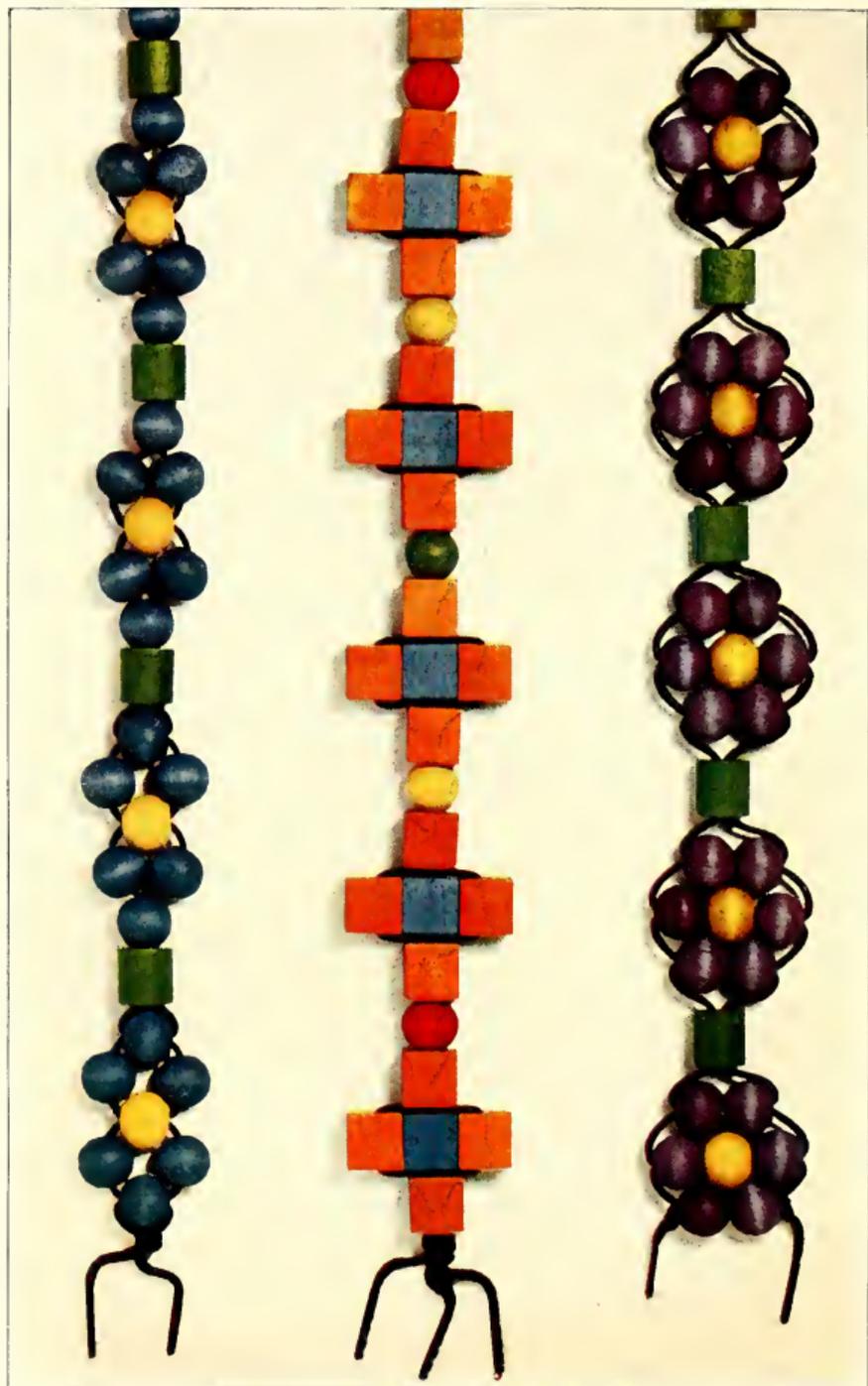
A thoughtful examination of these first strings of beads will give to any teacher an index as to the degree of development of each child's organizing power, for he cannot begin to organize his materials, even in the placing of the beads on the string, until he has in his mind some definitely organized plan for stringing them.

SECOND STEP. Some reference was next made to the shape of the beads or about other objects which were red, blue, yellow, green, purple, or orange. Here began, incidentally, the thought of organizing objects according to form or according to color, with no other instructions than this. The beads strung on the first day were examined and the question asked, “Who can think of a still prettier way to string the beads?” A dozen hands were raised, and then came the suggestion that each child should think out a way in which he or she would like to try to string them.

This planning beforehand is the real beginning of creative work. Each child should be given to understand that he is at liberty to change his plan if it does not prove pleasing,



FREE INVENTIONS OF THE CHILDREN AFTER FORMULATED
WORK HAD BEEN GIVEN



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only the new plan must first be thought out also. If there is time at the end of the lesson, several of the more pleasing combinations made by the children may be held before the school and some child be called upon to describe each one of these.

THIRD STEP. They can next copy these; or, if they prefer, they may try again to create more pleasing combinations of their own, or they may be allowed to change the colors in a given design. This is to help the slower children by letting them have the benefit of reproducing the work of those whose feeling for color, rhythm, or form is greater than their own. Imitation often has to precede creative work.*

Even the great artists of the world show first their teacher's style before coming into their own creative method of work. This fact seems to be overlooked by many teachers

*The following extract is taken from Report of the Chicago Principals' Association on "Original Effort of Pupils."

"Imitative activity is usually set over against original or self-effort or activity, as though falling outside of such category is the exact opposition of creative effort.

"But an analysis of this phase of the experience shows no such absolute opposition between imitation and original effort. All activity is more or less both. Growth is by means of imitating one's self or others. There is no other way to get the material of experience. The distinction between these aspects of growth, like that between active and passive modes of the mental life, is a relative one. In certain activity there will be more of one factor than of the other. Nothing is absolutely new. Every invention is in some degree imitation. The early periods of growth are more imitative than the later ones. It is possible to be original or individual in one's imitations; or, rather, it is necessarily so. No two persons would produce a copy in exactly the same way. There is, then, no opposition between original effort and imitation in its best sense. Imitation is one way original effort functions, especially in children. It is only when imitation is selected out, emphasized, and made the main activity of educational procedure, that it becomes destructive of self effort."

who would force children to do creative work before they are ready for it. However, the creative work should come as soon as possible, and it is surprising how soon it comes and how satisfactory it is after the child has grasped the few fundamental laws of combination.

FOURTH STEP. After the class has strung four or five strings of beads, trying each time to string them with more pleasing effects than before, it is well for the teacher to begin to use her larger knowledge of the possibilities of the beads, by suggesting that the children sort the beads according to color. This is best done at a table around which the children can gather and pass the beads of this or that color to the child who is making a collection of such and such a color. However, the work may be done by each child separating his beads into groups of each color and then the children who are collecting red beads can pass down the aisle and collect all the groups of red beads; the child or children who are collecting the blue beads can pass down the aisle and collect the blue ones, and so on, until each box contains only one color of beads. In some cases it is found best for the teacher to sort the beads beforehand. When the beads were next strung no mention was made as to the order in which spheres, cubes and cylinders should come. The strings of red beads were collected in a bunch and hung up; then the orange colored next, then the yellow, then the green, then the blue, and last the purple or violet, until the rainbow order of colors was thus incidentally made by hanging the six bunches in the order of the colors of the rainbow.

In one room a triangular prism of glass had been previously hung in one of the windows, causing the sunlight to cast a rainbow of color on the opposite wall. The chil-

dren at once recognized the arrangement as that given in the rainbow. Such lessons ended in talks about flowers and fruits whose color suggests the color of the rainbow. This prepared the children for some of the color lessons which came later in their bead stringing.

FIFTH STEP. The beads were next given out in boxes, each containing the three forms, but only one color. The children were told to string them as they pleased. Some at once showed their sense of rhythm by stringing them in an orderly manner, one sphere, one cylinder, one cube, or a cube, a sphere, a cube, a sphere, etc. Others mixed the form indiscriminately. When strung, the separate strings may be joined in the rainbow order of red, orange, yellow, green, blue, and violet, and hung on the wall, either as a fringe or looped in pleasing curves across the top of the blackboard.

SIXTH STEP. When the boxes containing the different colored beads were next given out, the children were led to sort them as to form, and each child to select some one color and one form to string; as, for example: A collects 24 red balls; B collects 24 blue balls; C collects 24 yellow cylinders, etc. Now began a series of definite lessons in number and rhythm, which proved very interesting to children as young as six and as old as ten or eleven years.

It is always best for the teacher to be free at this period, so as to add her interest to the interest of the children. But, if necessary, the directions may be given out or written on the blackboard, and the teacher may turn to another class. She can begin by saying, "Each one of you may make a string of beads which will show one color, one form, one position, and one in number," the last named direction being explained as meaning one bead, a space, one bead, a space, etc.

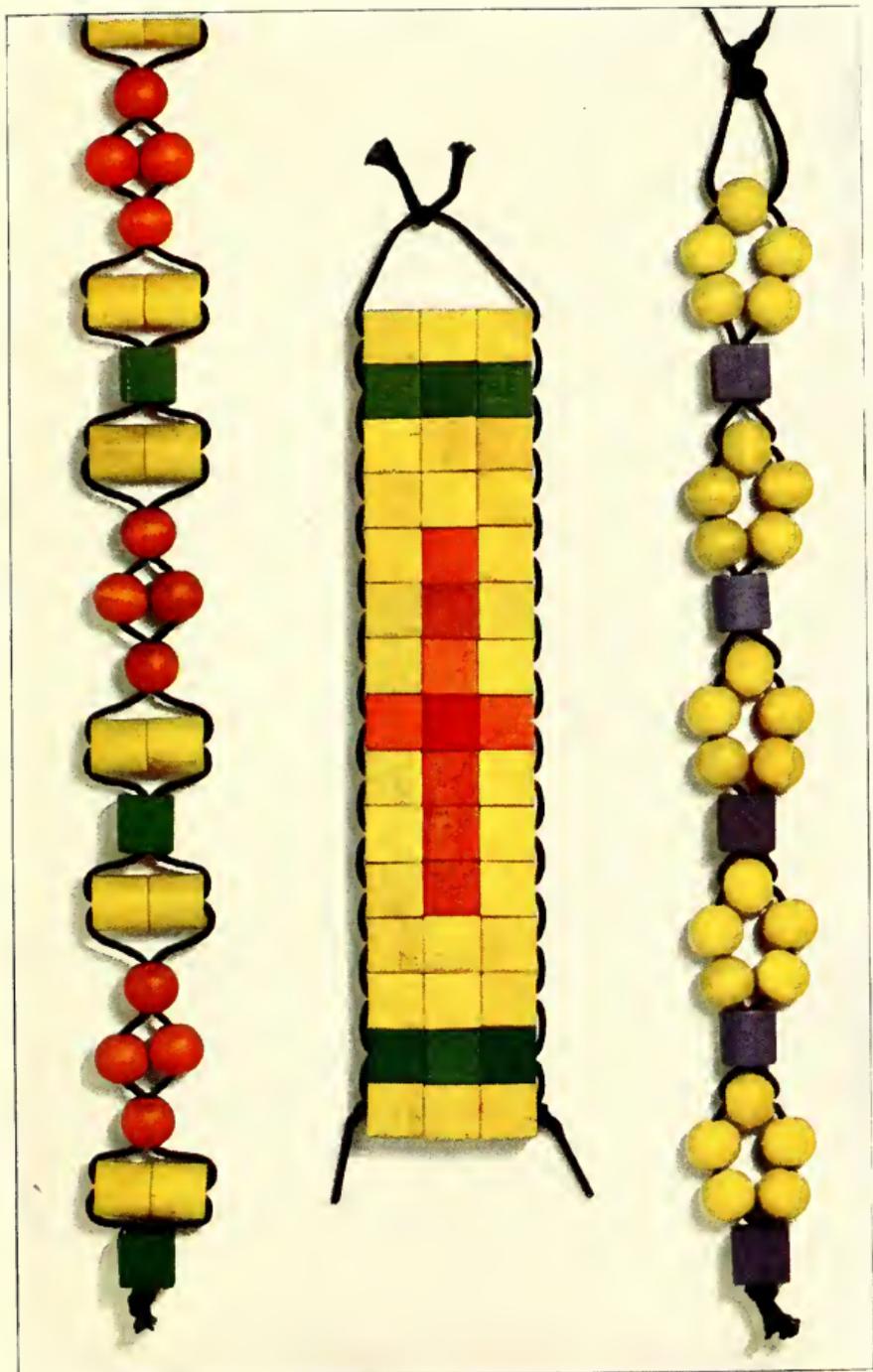
**Beginning of a
Feeling for
Rhythm**

This work resulted in awakening a dim consciousness of rhythm in the children, as they counted "one and one and one." Soon a child suggested that they should clap their hands as they counted. Then two beads and a space, two beads and a space, etc., were strung, and then came two claps and a silent counting of one, two; then two claps and a pause, etc.

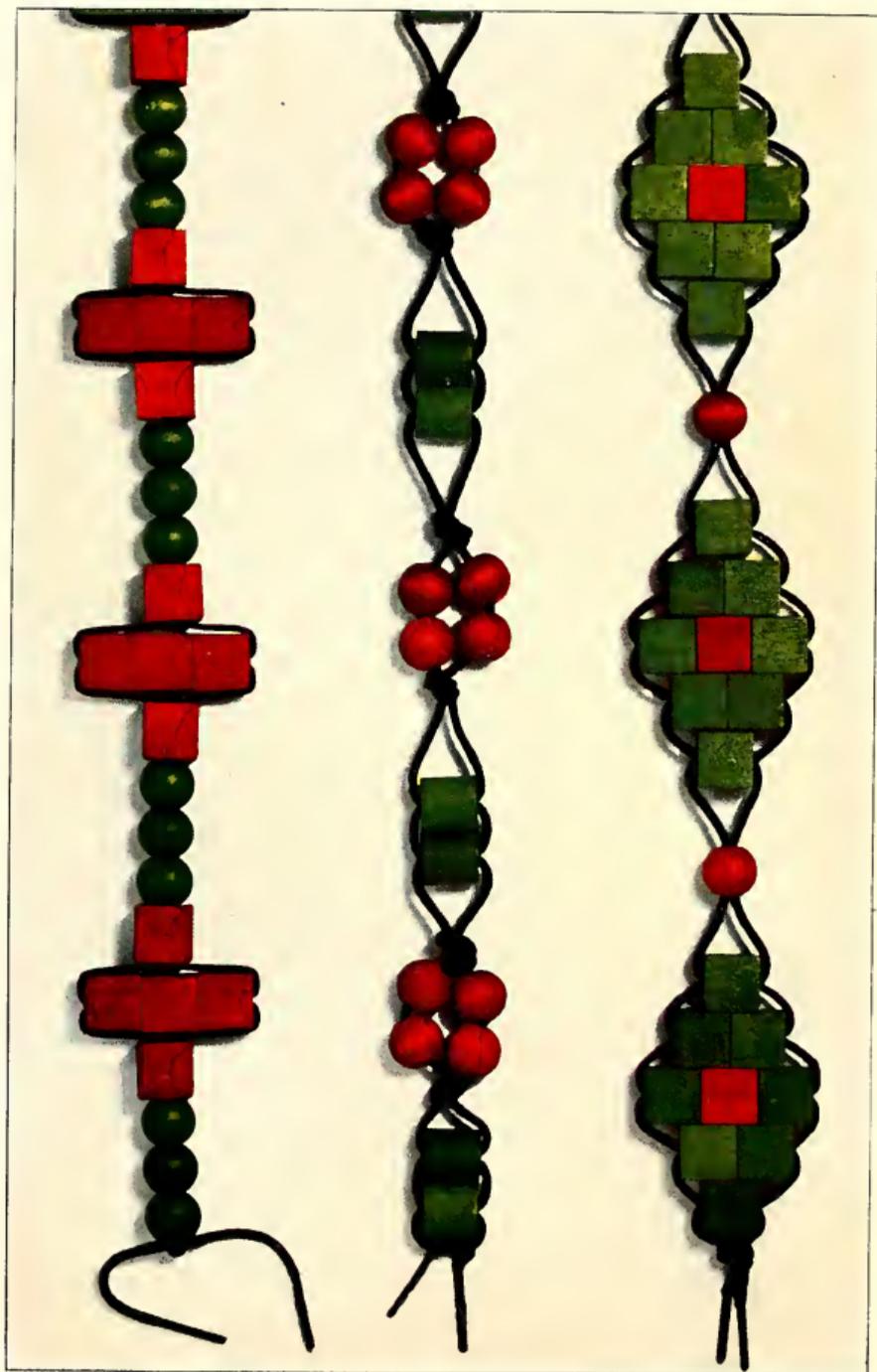
In a short time each child was busy composing a rhythm of his or her own, the one requirement being that it could be clapped or sung easily. Beating in time soon followed, and also whole, half, and quarter notes. For example, a child would first count "One, two; one, two, three; one, two; one, two, three;" or, "one; one, two, three; one; one, two, three; one," etc.

These "songs," as the children called them, at first consisted in merely counting in rhythmic cadence, with clapped accompaniment or other rhythmic gestures, such as patting the foot, beating time in the air with the hands, etc. But it was soon suggested by a child that they first string their beads in rhythmic succession; then count, or chant the numbers and then fit words to them. In this way the feeling for rhythm was *awakened by their own self-activity*, which is much better than being brought to them from without.

This, of course, is but the dawning of the rhythmic sense, and it is to be followed by the children being led to discover the rhythm in simple musical compositions and in rhymes and other poetic expressions of song. In passing it may be interesting to note that, as architecture has been called "frozen music" by those who feel the rhythm of form as well as the form of rhythm, we saw here in the embryonic state the same feeling expressed by the children themselves in their discovery of rhythm in the numerically ordered stringing



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of the beads. As they showed the spontaneous connection made by them between rhythmic arrangement of forms and rhythmic sounds of words.

This creation of rhythm by the children was followed by the examination of the rhythm of simple piano music and the measured scanning of simple poetry. It is not well to give too much of this; merely enough to quicken the children in their creation of rhythm and to let them know that a great world of music lies beyond rhythm.

One teacher who failed to give them this recognition of the large world of music which awaited them found that after a time they refused to take any interest in any music except that created by themselves, which fact of course showed arrested growth, as they will get an exaggerated idea of the importance of their own work.

In speaking of rhythm as a factor in education, Francis M. Arnold has well said:

“Teachers are beginning to realize that rhythm should be developed from *within* the child, and not imposed upon him from without. When this is generally understood, there will be less difficulty with the tendency toward the jerky and disjointed in piano playing. The child should be led to develop rhythm from himself, and through his own heart-beat to feel the universal rhythm.”

**Beginning of a
Feeling for
Proportion**

The awakening of the sense of rhythm is, however, but one result from the organized use of points. Spacing, which lies at the foundation of all decorative art, is easily begun by having the children first string one form and one color in a continuous string. (See Fig. 1, Plate I.) Then so separate the beads on the string as to make whatever space

he or she thinks would be pleasing. (See Fig. 4, Plate I.) These were compared and measured, and the children quickly learned that the more subtle spacing, such as one and one half the width of the bead, is prettier than twice its width, etc. More complex spacing came later, with the two or more strings. (See Plates II and III.)

This grouping and spacing led directly into designing, by substituting for the beads first some ornamentation, such as the perpendicular and horizontal lines of the triglyph, and then the Latin cross, the Maltese cross, the fleur-de-lis or some other historic form, and by having the beads represented with straight lines. (See Plate IX.)

The same design was sometimes repeated with different spacing, just as the same group of beads had been spaced differently. In a thousand and one ways the children learned to play with and master and hence create proportionate spaces just as they mastered and created simple rhythm.

**Beginning of a
Feeling for
Color**

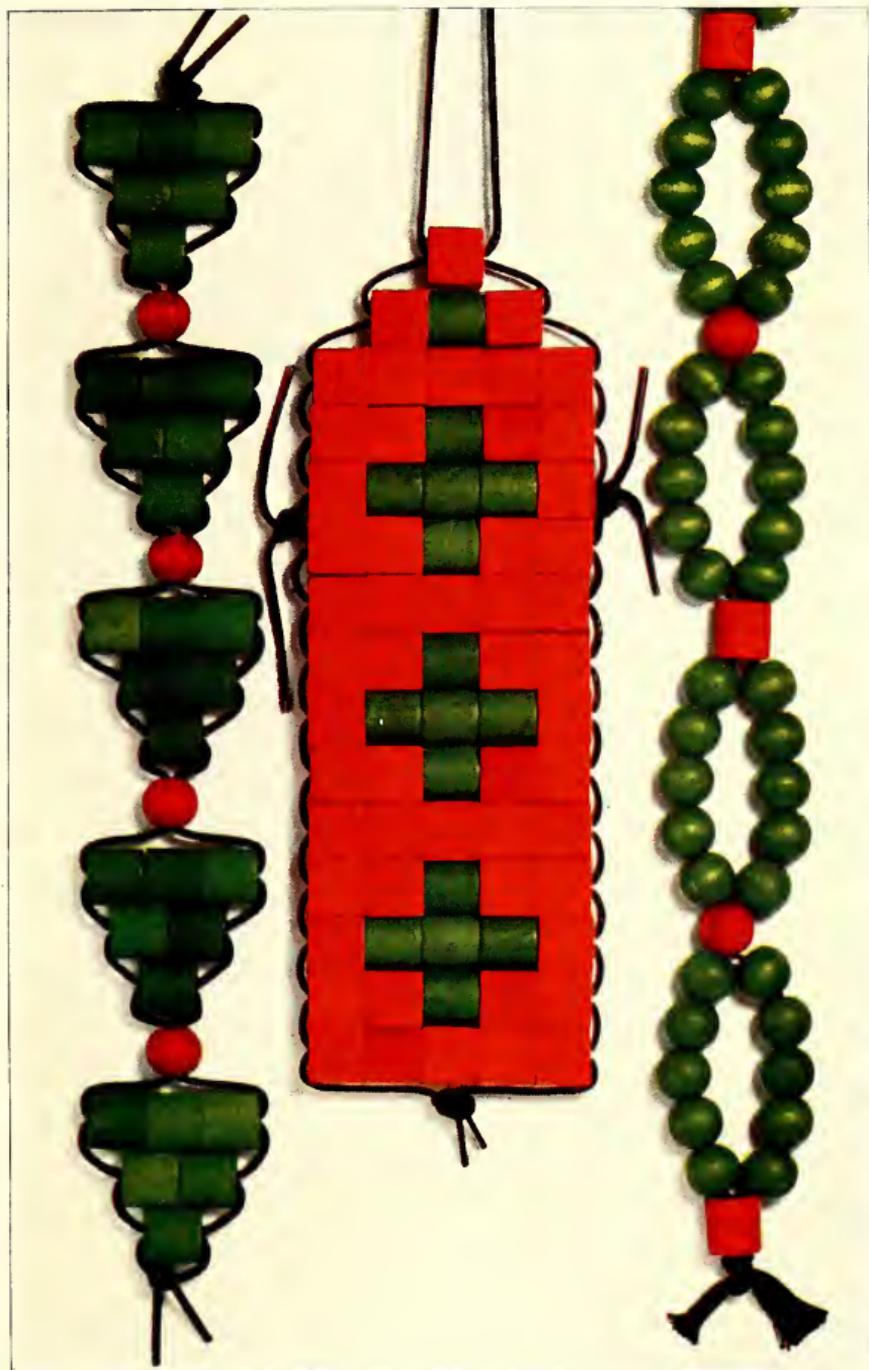
A third art, that of color, may be easily and naturally awakened if colored beads are used as, for example:

CONTRASTED HARMONIES

Red, blue, and yellow beads were strung with spacing of the black shoestring, between which at once harmonized these primary colors.

COMPLEMENTARY HARMONIES

Red, blue, and yellow chalk were used to make the three sides of a triangle. Where these crossed, the children discovered that orange, green, and purple were made. Again, in another room, were used liquid preparations of red, blue,



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and yellow paint (made from cakes of gamboge, carmine, and Prussian blue paint). Several small bottles were filled with these colored liquids. First one and then another child was called to the front of the room and allowed to select one of the colors. He or she was then given an empty bottle and told to mix the other two colors in it.

The result, of course, was that when the red was chosen, the remaining colors, blue and yellow, when mixed, made green. If the blue color was selected, the red and yellow being mixed made orange; and if the yellow was the one taken, the red and blue mixed made purple.

Thus the children soon learned that *complementary harmony* meant the presence of the three fundamental colors, and from this time forward their various combinations of beads were made in harmonies of red and green, or blue and orange, or yellow and purple.

ANALOGOUS HARMONIES

Later on, the older grades were given the *Analogous Harmonies*, and in combinations where three colors were called for, many pleasing harmonies of red, orange, and yellow; or orange, yellow, and green; or yellow, green, and blue; or green, blue, and purple; or blue, purple, and red, were made. They soon learned by experimenting that these "harmonies" were more pleasing when a larger proportion of the more quiet colors were used than when the stronger colors preponderated. In fact, some designs were made almost entirely of the softer colors, with here and there a single bead of the red, orange, and yellow, which gave somewhat the jewel effect, and were suprisingly artistic.

In a short time they became freer in their use of analogous harmonies, and frequently omitted the uniting color

as, for example, combinations were made of green and purple, with the unifying blue omitted; or other combinations were designed almost wholly of green, with a yellow bead here and there for high light. One little fellow said, "Colors that go well together are 'chums,' aren't they?" Another explained that he used orange and green together because both had yellow in them. In many ways they gave evidence of their comprehension of the basis of color harmonies.

Later on, glass beads were given the older pupils and real art work was produced, showing how quickly a feeling for good color combinations may be awakened even with crude materials.

Each formula caused the creation of a number of entirely different designs, a few of which are given in Plates I, II, and III. After this training in formal organization, the children were allowed to use three, four, or five colors, two or three forms, two or three positions, and any number of one kind, as they chose. The only requirement being that they should be able to formulate their designs.

These exercises have not only proved of much practical help to the grade teacher in her vexing problem of how to develop free, creative work in her children, and at the same time avoid weak and capricious work, but the eager interest of the children has shown that they touched the self-active, creative impulse which is within each child. They are at the same time a good, external illustration of the often misunderstood spiritual law of "unity under variety."

The next step is the organization of "the embodied line."

